

REMARKS

Favorable reconsideration of this application is respectfully requested in light of the following remarks, wherein Claims 15-18 have been added to the application. Currently, Claims 1-18 are pending in the present application.

As an initial matter, the specification stands objected to because of formality issues with regard to the Abstract. As a result, Applicants are submitting a new Abstract, which is being submitted on a separate sheet attached hereto. Accordingly, withdrawal of the objection to the specification is respectfully requested.

Claim 2 stands objected to for failing to limit the subject matter of a previous claim. However, Applicants respectfully disagree. In particular, Claim 1 defines that "the power of the mining actuator connected to the separate hydraulic circuit is arranged to be adjusted by adjusting the hydraulic power...". However, Claim 2 defines that "the power of mining actuator connected to the separate hydraulic circuit is arranged to be adjusted by adjusting the hydraulic pressure...". One having ordinary skill in the art would understand that hydraulic power is a product of hydraulic pressure and hydraulic flow (hydraulic power = pressure * flow). As such, hydraulic pressure (as defined in claim 2) further limits the recitations in Claim 1 with regard to hydraulic power. Accordingly, withdrawal of the claim objection is respectfully requested.

Claims 1-14 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,369,848 to *Salmi et al.*

The present invention, as defined in independent Claim 1, pertains to a hydraulic system for mining equipment comprising at least one hydraulic circuit with pressure fluid channels and at least one hydraulic pump. The hydraulic pump is arranged to generate hydraulic power in the hydraulic circuit. At least one power unit drives the hydraulic pump.

At least one hydraulic mining actuator is connected to the hydraulic circuit and configured to act on a tool in the mining equipment. At least one hydraulic auxiliary actuator connects to the hydraulic circuit. Means for adjusting the hydraulic power are led to the mining actuator and the auxiliary actuator connected to the hydraulic circuit. The hydraulic system comprises a main hydraulic circuit and at least one separate hydraulic circuit. The main hydraulic circuit and each separate hydraulic circuit are separate from each other, each having a separate hydraulic pump for generating hydraulic power. At least one mining actuator is connected to the separate hydraulic circuit and the mining actuator is configured to be driven by the hydraulic power acting in the separate hydraulic circuit. The power of the mining actuator connected to the separate hydraulic circuit is arranged to be adjusted by adjusting the hydraulic power generated by the hydraulic pump comprised by the separate hydraulic circuit.

Independent Claim 11 defines a method of adjusting the power of a rock drill machine, the rock drill machine comprising at least the following drilling actuators: a percussion device a rotation device and a feed device of which at least one is connected to a hydraulic circuit method comprising: generating hydraulic power in said hydraulic circuit with at least one hydraulic pump; driving the drilling actuator connected to the hydraulic circuit by the hydraulic power acting in the hydraulic circuit; adjusting the power of the drilling actuator connected to the hydraulic circuit by adjusting the hydraulic power to be fed to the drilling actuator; and adjusting the power of the drilling actuator connected to the hydraulic circuit mainly by adjusting the pumping output of the hydraulic pump.

As described in paragraph [0003] of the present application, a problem of hydraulic circuits of the prior art is that the hydraulic pressure and hydraulic flow obtained from the hydraulic pump are adjusted with adjusting members arranged in the pressure fluid channels

of the actuators, such as pressure regulators and restrictors. These adjusting components cause significant power losses in a hydraulic system. An advantage of the present invention is that no external components other than a hydraulic pump are required in pressure fluid channels for adjusting the flow and the pressure, whereby power losses caused by pivot valves, resistors and the like are avoided. See paragraph [0009] of the present application.

In contrast, *Salmi et al.* discloses a control system for a rock drill where the operation of the rotation, feed and the shank cylinder are made interdependent. See column 1, lines 27-32 of *Salmi et al.* For example, a striking apparatus (3) receives pressure medium from a pump (6) and the same pump also delivers pressure medium to a feed motor (5). Furthermore, the feed motor receives pressure medium from pump (10), which delivers pressure medium to a rotation device (4). Thus, in *Salmi et al.*, the hydraulic circuits connected to pumps are not separate from each other, but instead *Salmi et al.* teaches to arrange them interdependent.

Moreover, in the hydraulic circuit of *Salmi et al.*, there are adjusting components in the pressure channels. For example, there is a pressure-reducing valve (17) in a channel (14) for reducing the pressure fed to the feed motor (4). Column 3, lines 13-16 of *Salmi et al.* Furthermore, the operation of the actuators of *Salmi et al.* are controlled by means of pressure-controlled valves (23). Column 3, lines 24-37 of *Salmi et al.* In the valve (23), the return line is also choked, as is mentioned in column 3, lines 4-6. Thus, in the *Salmi et al.* patent, there are adjustment components in the hydraulic system.

However, *Salmi et al.* fails to disclose that the power of the mining actuator is adjusted by adjustment in the hydraulic power generated by the hydraulic pump. Because there are adjusting components arranged in the hydraulic channels in the *Salmi et al.* device, there is no need to adjust the power of the mining actuator by adjusting only the pump. In the

present invention, the performance of mining actuators connected to the separate hydraulic circuit is controlled by means of one or more hydraulic pumps. *Salmi et al.* document fails to disclose or suggest such power control. Accordingly, *Salmi et al.* fails to disclose the patentable features of independent Claims 1 and 11.

For at least the foregoing reasons, it is submitted that the method and device of independent Claims 1 and 11, and the claims depending therefrom, are patentably distinguishable from the applied document. Accordingly, withdrawal of the rejections of record and allowance of this application are earnestly solicited.

Should any questions arise in connection with this application, or should the Examiner believe a telephone conference would be helpful in resolving any remaining issues pertaining to this application, it is respectfully requested that the undersigned be contacted at the number indicated below.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-0573. This paragraph is intended to be a CONSTRUCTIVE PETITION FOR EXTENSION OF TIME in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully Submitted,

Date: September 14, 2007
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